REQUEST FOR PROPOSAL (RFP) NO. RAM-7-77539
"INDEPENDENT TESTING OF SMALL WIND TURBINES"

REQUEST FOR PROPOSALS
READ THIS DOCUMENT CAREFULLY

This solicitation is being conducted under procedures for competitive subcontracts established by the National Renewable Energy Laboratory (NREL).
NREL will award subcontracts based on the following.

- All Statement of Work (SOW) requirements being met
- The best combination of:
  - Technical factors (based on qualitative merit criteria) and
  - Evaluated price (or cost)

Issue Date: July 9, 2007 Due Date: August 22, 2007 Time Due: 5:00 P.M. Mountain Time

Technical Questions must be received in writing no later than July 23, 2007.

1. Solicitation Type Best Value Selection
Firm Fixed Price with Price Participation

Submit offers to and request information from the NREL RFP Contact below

2. NREL RFP Contact

Loretta Schmidt, Senior Subcontract Administrator
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National Renewable Energy Laboratory
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Electronic (PDF or Word) copies of forms and appendices can be found at:
http://www.nrel.gov/business_opportunities/related_docs.html

3. Project Description

This RFP's primary objective is to conduct independent testing (IT) on commercially available[1] small wind turbine systems (maximum 200 m^2) through a suite of tests at the National Renewable Energy Laboratory's (NREL's) National Wind Technology Center (NWTC). NREL is accredited by the American Association of Laboratory Accreditation (A2LA) and is widely recognized as a competent testing organization. Testing will be compliant with International Electrotechnical Commission (IEC) standards. Results of tested turbine systems will be posted on NREL's Web site.

The objectives of IT are to:

- Reduce barriers to the expansion of wind energy, an important goal for the Department of Energy's Wind and Hydropower Technologies Program
- Target commercially available turbine systems that have a high probability of success in the U.S. market over the next several years
- Select representative models for testing
- Distinguish reliable, safe wind turbine systems from products that do not perform as advertised or are hazardous
- Provide test results on small turbine systems that are independently tested in an accredited facility to manufacturers and the general public
- Post test results that can then be used by the Small Wind Certification Corporation (SWCC) to certify small wind turbine systems.

NREL will select a representative model for testing, install the turbine system at the NWTC, evaluate the turbine through testing and other observations over a period of up to approximately one year, and report its findings on the NREL Web site.

The Subcontractor will provide the complete turbine system, including turbine, tower, wiring, controls, tools, spare parts, and documentation. NREL will provide the foundation and the load connection. If the turbine system is a battery charger, NREL will supply an appropriate battery bank and energy dissipation device.

The turbine system must meet several requirements to be considered for the solicitation. These requirements include:

1. The turbine system must be currently available in the U.S. marketplace and must convert wind energy to electricity. It must generate electricity for use on a 60-Hz AC grid or for a 12-, 24-, 36-, or 48-v battery system. Mechanical turbines and direct-connect (variable-voltage) generator/motor configurations will not be accepted.
2. The swept area must be less than or equal to 200 m^2.
3. The system must be new, not refurbished.

[1] Turbine system and spare parts are readily available for sale.

4. The system must meet NREL and National Electric Code (NEC) electrical safety requirements, such as circuit protection and appropriate, grounded enclosures.
5. Due to safety and access restrictions, the hub height for horizontal-axis turbines shall not exceed 100 feet, and overall turbine height must not exceed 130 feet.
6. The system must be available for shipment and installation at the NWTC upon execution of the subcontract.

NREL will evaluate turbine systems based on testing protocols, which are defined in detail by IEC standards and, where applicable, by the latest version of the draft American Wind Energy Association (AWEA) standard for small wind turbines. These tests include duration, power performance, acoustic noise emissions, safety and function, and power quality.

1) Duration per IEC 61400-2: provides important information on the reliability of the turbine. Key elements are that the turbine's operation is recorded over a period of 2500 hours and with exposure to a wide range of wind speeds. The turbine should operate with no major failures, no impending failures as may be indicated by the post-test inspection, and with downtime limited to 10% of test time.
2) Power performance per IEC 61400-12-1: a key result is the calculated annual energy production based on the measured power curve and a wind speed distribution for a typical installation with average winds of 5 m/s and other average wind speeds.
3) Acoustic noise emissions per IEC 61400-11: test yields a sound power level that can be used to estimate perceived noise levels at various distances from the turbine.
4) Safety and function per IEC 61400-2: defines whether the turbine operates as designed. Minimum safety requirements include: i) a means to prevent rotor over speed under any conditions, ii) a means to maintain the turbine in a safe condition upon loss of load, iii) capability for easy manual shut down at any time, iv) provisions for safe maintenance operations, v) provisions to prevent unauthorized adjustment of the protection system, and v) clear maintenance instructions.
5) Power quality per IEC 61400-21: quantifies details of electrical output of the turbine, such as power factor, harmonic distortion, electrical surges during start-up and shutdown, and flicker.

The project will be completed and testing will be terminated when all test requirements have been fulfilled or NREL encounters a significant, unresolved problem, whichever occurs first. Significant, unresolved problems include:

- A major turbine system failure, which per the IEC small turbine system design standard, includes "any failure of the system components that affect the turbine safety and function including blades, charge controller, alternator, yaw bearings, or inverter."
- A turbine system operational or safety problem that is not resolved within one month from the time it was identified.

All data generated while conducting the various tests will be public data. The signed, accredited test reports and summary test reports will be made available to the public through posting on the NREL Web site as soon as possible after project completion. The

written summary reports may be augmented with audio and video recordings if appropriate. NREL will provide complete, IEC-compliant reports to the Subcontractor.

Participants in this project must recognize that NREL will post reports of all significant results obtained, including negative results that may have a detrimental effect on future sales. If turbine system behavior is observed that is of concern to experienced wind turbine experts at NREL, NREL will make every effort to explain fully and without bias the observed behavior in its reports. If NREL encounters a significant, unresolved problem, testing will be terminated and NREL will report on results it has obtained to that point, including the unresolved problem. In case of a major turbine system failure, the report will say, "The test turbine system experienced a major failure (or a major, unresolved safety deficiency) during testing at the NWTC".

4. Proposed Subcontract Award and Period of Performance

NREL intends to award up to eight (8) firm fixed price with price participation type subcontracts under this solicitation document. It is expected that testing will require a period of performance to allow a minimum of 2500 run hours required in the duration test. NREL anticipates that the offeror will contribute a minimum of 20% of the subcontract price/cost, which includes documentation, travel, onsite participation, and meeting attendance. NREL reserves the right to make any number of awards or to not make any awards under this solicitation document.

The intent of this solicitation is that title to all materials, equipment, and supplies purchased by NREL in support of this subcontract will remain with NREL.

5. Competitive negotiated subcontract using Best Value Selection

This solicitation shall be conducted using Best Value Selection that results in awards that are most advantageous to NREL based on the best value combination of (a) evaluated qualitative merit and (b) evaluated price (cost) of the offers submitted.

Best Value Selection is based on the premise that, if all offers are of approximately equal qualitative merit, award will be made to the offeror with the lowest evaluated price (cost). However, NREL will consider awarding to an offeror with a higher evaluated price (cost) if the offer demonstrates the difference in price (cost) is commensurate with the higher qualitative merit. Conversely, NREL will consider awarding to an offeror with a lower evaluated qualitative merit if the price (cost) differential between it and other offers warrant doing so.

6. Qualitative Merit Criteria for Best Value Selection

The Statement of Work (Appendix A) in this Request for Proposal serves as NREL's baseline requirements that each offeror must meet.

Evaluators will use the following qualitative merit criteria to determine the technical value of the offer in meeting the solicitation objectives. Each qualitative merit criteria and its assigned weight are provided below.

6.1 **Demonstrates evidence that the turbine system will comprise a significant share of the U. S. small wind turbine market (50%**) - Offeror will provide information on:

- Projected Annual Energy Production
- Turbine system cost
- Tabulated power curve
- Current (2007) annual manufacturing capacity
- Turbine features
- What is the extreme wind speed that the turbine system can endure[2]
- Design turbine system lifetime
- Operations and maintenance requirements
- Operations and maintenance costs
- Warranty, including coverage length and content (parts/labor/exclusions)
- UL rating of the inverter and other components
- Sales history, especially in the past year
- Number of turbine systems currently installed
- Tower options
- Number of dealers/installers
- Manufacturing volume capacity
- Existing/pending IEC certifications
- Capabilities to support through the life of the turbine system.

6.2 **Offeror's capabilities to manufacture and supply turbine systems for the U.S. market and to provide the associated installation and maintenance support (20%)** - demonstrated capability to fulfill the objectives of the project, as evidenced by:

- Company's experience in the U.S. small wind turbine market
- Ability to deliver test turbine system to test site within 30 days of contract execution
- Technical and financial capability of sustaining the project's objective over the full performance period
- Demonstrated track record for producing high-quality work on time and within budget
- Qualifications of proposed project staff members in relation to their responsibilities under the project.

6.3 **Turbine System Cost-effectiveness (30%)**

[2] Although wind resource maps show that the NWTC is only a Class 1-2 site for wind energy production, it experiences frequent extreme winds. Last year NREL recorded two events during which wind at 20 m above ground gusted to 100 mph and 24 events during which it gusted to 60 mph.

- Total system installed cost per unit of wind intercept area
- Turbine system cost
- Balance-of-system components and associated costs.

7. Price (cost) evaluation for Best Value Selection

After evaluation of the qualitative merit criteria, the following price (cost) evaluation will be used to determine the best value of the offer in meeting the objectives of the solicitation.

The combined qualitative merit value will be considered substantially more important than the price (cost).

8. Additional Factors for Evaluation

The Source Evaluation Team will consider program factors in making a competitive range determination and final negotiation rank order. The program factors are not weighted. Program factors include:

- Turbine size diversity
- Manufacturer diversity
- Turbine system configuration diversity
- Technology innovation
- Geographic diversity
- Company's planned use of test reports
- Additional proposed price participation above 20%

9. Evaluation process

NREL will evaluate offers in two general steps:

Step One—Initial Evaluation
An initial evaluation will be performed to determine if all required information has been provided for an acceptable offer. Offerors may be contacted only for clarification purposes during the initial evaluation. Offerors shall be notified if their offer is determined unacceptable and the reasons for rejection will be provided. Unacceptable offers will be excluded from further consideration.

Step Two—Discussion, Selection, Negotiation, and Award
All acceptable offers will be evaluated against the Statement of Work (Appendix A) and the qualitative merit criteria listed above. Based on this evaluation, NREL has the option, depending on the specific circumstances of the offers received, to use one of the following methods of selection:

(a) make individual selection(s), conduct negotiations, and make an award(s);

(b) conduct parallel negotiations with all offerors and make award(s);

(c) conduct discussions with all offerors, select successful finalists, conduct parallel negotiations with successful finalists, and then make award(s);

(d) conduct discussions with all offerors, conduct parallel negotiations with the finalists, select successful finalist(s), and then make award(s);

(e) select successful finalists, conduct successive negotiations, and make successive selections and awards;

(f) make no award(s).

10. Proposal Preparation Instructions

- Provide one proposal document (for each proposed turbine system to be tested) in an original and twelve (12) copies (may be single- or double-sided).
- Use a 12-point font.
- Maintain at least 1-inch margins on all sides.
- Do not submit a facsimile or electronic proposal.

Specific items required in the proposal include the following:

A title page, including the RFP title and number, name of your organization, and project manager name (with postal address, telephone and fax numbers, and e-mail address). A page is defined as one side of an 8 ½" x 11" sheet of paper.

A completed Eligibility Form (Attachment 2).

A cover letter indicating whether the offeror accepts the sample subcontract (Attachment 3) including all of its appendices (Statement of Work is Appendix A (Attachment 1), Standard Terms and Conditions is Appendix B-2, Intellectual Property Provisions are Appendix C-1 or 2, as applicable). The cover letter should contain a summary of deviations/exceptions (if any) to the subcontract schedule, Statement of Work, and the standard terms and conditions and/or the intellectual property terms and conditions in the appendices. The offeror will explain any exceptions (including deviations and conditional assumptions) with respect to the subcontract and terms and conditions. Any exceptions must contain sufficient amplification and justification to permit evaluation. Such exceptions will not automatically cause an offer to be termed unacceptable. A large number of exceptions or one or more significant exceptions not providing any obvious benefit to the Government or NREL may, however, result in rejection of such offer.

A technical proposal directed toward meeting the requirements of NREL's Statement of Work (Attachment 1) and qualitative merit criteria (see item 6 above). The technical proposal shall be organized in the following sections: (1) introduction and project summary, (2) wind turbine system description, (3) background of turbine system manufacturer, (4) proposed project work plan, (5) key deliverable and project milestone schedule, and (6) project organization. Each section shall be a maximum of 7 pages (resumes, photographs, and graphs not included in page count) and the total proposal

shall not exceed 40 pages. The technical proposal shall address the following as a minimum:

1. Introduction and Project Summary

Present a one page introduction and summary of the turbine system, including the turbine size; turbine type; demonstrate evidence that the turbine system will comprise a significant share of the U.S. small wind turbine market; cost-effectiveness, including installed cost per unit of wind intercept area, turbine system cost, and balance-of-system components and associated costs; offeror's capabilities to provide associated installation and maintenance support for test project; and capability to manufacture and supply turbine systems for U.S. market.

2. Wind Turbine System Description

Provide a detailed description of the turbine system, including the turbine type and size, and tower configuration and size. In addition, provide details on the following characteristics of the test turbine system: projected Annual Energy Production; tabulated power curve; selling cost; turbine system features; extreme wind speed that the turbine system can endure; design turbine system lifetime; operations and maintenance requirements; operations and maintenance costs; warranty; and the UL rating of the inverter and other components. Offeror should also provide any public domain information, such as published technical information, sales brochures, and company Web site information.

3. Turbine System Manufacturer Background

Information on company's experience should include sales history, especially in the past year; number of turbine systems currently installed; tower options; number of dealers/installers; manufacturing volume capacity; existing/pending IEC certifications; and capabilities to the support for the life of the turbine system.

4. Proposed Project Work Plan

Describe in detail how project team will meet the Independent Testing (IT) goals and objectives described in the Statement of Work.

5. Key Deliverable and Project Milestone Schedule

Provide a milestone chart that shows the timing of all major project activities and links these activities with project deliverables (e.g., milestones, meetings, and reports). Provide a letter of commitment demonstrating that a turbine system, as agreed to by NREL, will be available for installation within 30 days of subcontract execution.

6. Project Organization

Provide a description and organization chart for the proposed project. Describe the capabilities, expertise, and experience of the offeror and any partner organizations. Provide resumes of all participating key personnel and explain the

role of each participant. Provide Letters of Commitment from key partner organizations and project participants.

Provide information on any previous involvement that the offeror has had with similar wind turbine system projects and prior experience with the U.S. Department of Energy and its national laboratories.

As part of this proposal, the offeror shall provide a completed "Price/Cost Proposal Form". For each task, provide a detailed price/cost item description, estimated project price/cost, and the offeror's proposed contribution to total costs. IT project costs may differ from typical project costs estimated for a more normal installation at a typical homeowner's site because of NREL's requirements for environmental, safety, and security and to accommodate other aspects of this testing project. Use the attached soils report (Attachment 4) as the basis for designing a foundation for the NWTC test site.

The offeror's price/cost and delivery terms must be valid for 90 days from the offer date. The price/cost proposal should include support documentation for all categories of the proposed price/cost. The price/cost proposal should separate price/cost for lower-tier subcontract(s) and include support documentation for all categories of the proposed lower-tier subcontract(s) price/cost (see Price/Cost Proposal preparation instructions – see NREL's website below). The proposal must include proposed labor rates of the offeror and Subcontractors through the entire period of performance.

A completed "Representations and Certifications" form in only an original (see NREL Web site below).

This solicitation does not commit NREL to pay costs incurred in the preparation and submission of a proposal in response to this RFP.

11. Solicitation Provisions—full text provided

a. Late submissions, modifications, and withdrawals of offers

Offers, or modifications to them, received from qualified organizations after the latest date specified for receipt may be considered if received prior to award and if NREL determines that there is a potential cost, technical, or other advantage as compared to the other offers received. However, depending on the circumstances surrounding the late submission or modification, NREL may consider a late offer to be an indication of the offeror's performance capabilities, resulting in downgrading of the offer by NREL evaluators in the technical evaluation process. Offers may be withdrawn by written notice or telegram (including mailgram) received at any time before award. Offers may be withdrawn in person by an offeror or an authorized representative, if the representative's identity is made known and the representative signs a receipt for the offer before award.

b. Restrictions on disclosure and use of data

Offerors who include in their proposals data that they do not want disclosed to the public for any purpose or used by the government or NREL, except for evaluation purposes shall—

Mark the title page with the following legend:
"This offer includes data that shall not be disclosed outside the government or NREL and shall not be used or disclosed—in whole or in part—for any purpose other than to evaluate this offer. If, however, a subcontract is awarded to this offeror as a result of—or in connection with—the submission of this data, the government or NREL shall have the right to duplicate, use, or disclose the data to the extent provided in the resulting subcontract. This restriction does not limit the government or NREL's right to use information contained in this data if obtained from another source without restriction. The data subject to this restriction are contained on pages [insert page and line numbers or other identification of pages] of this offer"; and

Mark each page of data it wishes to restrict with the following legend:
"Use or disclosure of data contained on this page is subject to the restriction on the title page of this offer."

c. Notice of right to receive patent waiver (derived from DEAR 952.227-84) and technical data requirements.

Offerors (and their prospective Lower-Tier Subcontractors) in accordance with applicable statutes and Department of Energy Acquisition Regulations, (derived from DEAR 952.227-84) have the right to request a waiver of all or any part of the rights of the United States in inventions conceived or first actually reduced to practice in performance of the subcontract that may be awarded as a result of this solicitation, in advance of or within thirty (30) days after the effective date of subcontracting. Even where such advance waiver is not requested or the request is denied, the Subcontractor will have a continuing right during the subcontract to request a waiver of the rights of the United States in identified, individual inventions.

Domestic small business firms, educational institutions, and domestic nonprofit organizations normally will receive the Patent rights clause—retention by the Subcontractor—which permits the offeror to retain title to subject inventions, except in subcontracts involving exceptional circumstances or intelligence activities. Therefore, domestic small business firms, educational institutions, and domestic nonprofit organizations normally need not request a waiver.

If an offeror's proposal includes a lower-tier subcontract to another organization, that lower-tier organization's business type will determine the applicable

intellectual property provisions that will apply to the lower-tier subcontract. Note that a Lower-Tier Subcontractor may apply for a patent waiver under the same conditions as the offeror.

d. Disclaimer

NEITHER THE UNITED STATES; NOR THE DEPARTMENT OF ENERGY; NOR MIDWEST RESEARCH INSTITUTE, NATIONAL RENEWABLE ENERGY LABORATORY DIVISION; NOR ANY OF THEIR CONTRACTORS, SUBCONTRACTORS, OR THEIR EMPLOYEES MAKE ANY WARRANTY, EXPRESS OR IMPLIED, OR ASSUME ANY LEGAL LIABILITY OR RESPONSIBILITY FOR THE ACCURACY, COMPLETENESS, OR USEFULNESS FOR ANY PURPOSE OF ANY OF THE TECHNICAL INFORMATION OR DATA ATTACHED OR OTHERWISE PROVIDED HEREIN AS REFERENCE MATERIAL.

e. Solicitation disputes

The General Accounting Office and the Department of Energy do not accept or rule on disputes for solicitations for Requests for Proposals issued by Management and Operating Contractors for the Department of Energy (operators of Department of Energy National Laboratories). Should an offeror have any concerns regarding the NREL solicitation process or selection determination, the offeror may contact Marty Noland, Advocate for Commercial Practices, at (303) 384-7550. NREL will address each concern received from an offeror on an individual basis.

12. Solicitation provisions incorporated by reference general access

This solicitation incorporates one or more solicitation provisions by reference with the same force and effect as if they were given in full text. The following documents can be downloaded from the NREL general access website at http://www.nrel.gov/contracts/rfps/ or the NREL RFP Contact (see item 2) will make full text available upon request.

NREL Standard Terms and Conditions:
- Appendix B-2 (10/01/03)
- Addendum to Appendix B-2 (02/16/07)

NREL Intellectual Property Provisions:
- Appendix C-1 (10/22/98)
  or
- Appendix C-2 (10/22/98)

NREL Representations and Certifications for Subcontracts (05/10/07)

13. NAICS Code and Small Business Size Standard

a. The North American Industry Classification System (NAICS) code [formerly standard industrial classification (SIC)] for this solicitation is 541710.

b. The small business size standard for 541710 is 500 or fewer employees.